

CLAIMS

We claim:

1. An image-processing method comprising: obtaining representations of color values for plural pixels of an image, computing pairwise color averages of at least some pairs of pixels, and storing the color averages, wherein:

5 (a) the color value of each pixel is represented as a color symbol composed from a scalar luminance index and a scalar chrominance index;

(b) for each pair of pixels to be averaged, the averaging comprises:

(I) converting the luminance index and chrominance index of each pixel to coordinates of a point in a three dimensional color space;

10 (II) obtaining the mean of the resulting two points in the color space, thereby to obtain a mean color value; and

(III) quantizing the mean color value; and

(c) the quantizing step comprises:

(I) selecting a luminance value from a discrete set of quantized luminance values;

15 (II) selecting a chrominance value from an ordered discrete set of quantized chrominance values;

(III) composing a representation of the color average from an index of the selected luminance value and an index of an ordinal position of the selected chrominance value; and

20 (IV) storing said representation of the color average.

2. The method of claim 1, wherein the color symbol of each pixel comprises the sum of the chrominance index with a multiple of the luminance index.

3. The method of claim 1, wherein the method comprises compressing at least one image, and said color averaging is carried out in said image compression.

25 4. The method of claim 3, wherein:
the image compression comprises at least two sequential digital filtering operations;
the first said digital filtering operation is carried out on an input image;
each sequential digital filtering operation after the first is carried out on an intermediate image that is output from the preceding digital filtering operation; and
30 said color averaging is carried out in each said sequential digital filtering operation.

5. An image-processing method comprising: obtaining representations of color values for plural pixels of an image, computing pairwise color averages of at least some pairs of pixels, and storing the color averages, wherein:

- 5 (a) the color value of each pixel of each said pair is represented as a color symbol composed from a scalar luminance index and a scalar chrominance index;
- (b) each chrominance index designates an ordinal position in a spiral lattice of discrete lattice points in a color space;
- (c) within the color space, each lattice point has a neighborhood consisting of itself and a set of nearest-neighbor lattice points;
- 10 (d) for each pair of pixels to be averaged, the averaging is carried out, in part, by computing the mean of the chrominance indices of two selected lattice points; and
- (e) each said selected lattice point belongs to the neighborhood of one pixel of the pair.

6. The method of claim 5, wherein the color symbol of each pixel comprises the sum of the chrominance index with a multiple of the luminance index.

- 15 7. The method of claim 5, wherein:
 - each lattice point has an angular coordinate;
 - the respective angular coordinates of the selected lattice points define a closed angular interval not exceeding 180° ; and
 - the selected lattice points are chosen such that their mean value is the index of a lattice
- 20 point whose angular coordinate lies on said closed interval.

8. The method of claim 5, wherein the method comprises compressing at least one image, and said color averaging is carried out in said image compression.

- 9. The method of claim 8, wherein:
 - the image compression comprises at least two sequential digital filtering operations;
 - 25 the first said digital filtering operation is carried out on an input image;
 - each sequential digital filtering operation after the first is carried out on an intermediate image that is output from the preceding digital filtering operation; and
 - said color averaging is carried out in each said sequential digital filtering operation.